



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) Publication number: **0 629 697 A3**

(12)

## EUROPEAN PATENT APPLICATION

(21) Application number: **94304432.1**

(51) Int. Cl.<sup>5</sup>: **C12N 15/16, C12N 15/63,  
C12Q 1/68, A61K 31/00**

(22) Date of filing: **20.06.94**

(30) Priority: **21.06.93 US 81610  
18.05.94 US 246990**

(43) Date of publication of application:  
**21.12.94 Bulletin 94/51**

(84) Designated Contracting States:  
**AT BE CH DE DK ES FR GB GR IE IT LI LU NL  
PT SE**

(88) Date of deferred publication of search report:  
**19.04.95 Bulletin 95/16**

(71) Applicant: **ELI LILLY AND COMPANY**  
**Lilly Corporate Center**  
**Indianapolis Indiana 46285 (US)**

(72) Inventor: **Yang, Na Nora**  
**2750 Wood Wind Way**  
**Indianapolis, Indiana 46268 (US)**

(74) Representative: **Hudson, Christopher Mark et al**  
**Lilly Industries Limited**  
**European Patent Operations**  
**Erl Wood Manor**  
**Windlesham Surrey GU20 6PH (GB)**

(54) **Materials and methods for screening anti-osteoporosis agents.**

(57) The present invention relates to methods for the identification of therapeutic agents for the treatment of osteoporosis and serum lipid lowering agents. The invention relates to isolating cloning, and using nucleic acids from the promoter regions of transforming growth factor  $\beta$  genes comprising novel regulatory elements designated "raloxifene responsive elements". The invention also encompasses eukaryotic cells containing such raloxifene responsive elements operably linked to reporter genes such that the raloxifene responsive elements modulate the transcription of the reporter genes. The invention provides methods for identifying anti-osteoporosis agents that induce transcription of genes operably linked to such raloxifene responsive elements without inducing deleterious or undesirable side effects associated with current anti-osteoporosis therapy regimens.

EP 0 629 697 A3

ATTORNEY DOCKET NUMBER: 10177-191-999  
SERIAL NUMBER: 10/603,115  
REFERENCE: B55



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) Publication number : **0 629 697 A3**

(12)

## EUROPEAN PATENT APPLICATION

(21) Application number : **94304432.1**

(51) Int. Cl.<sup>5</sup> : **C12N 15/16, C12N 15/63,  
C12Q 1/68, A61K 31/00**

(22) Date of filing : **20.06.94**

(30) Priority : **21.06.93 US 81610  
18.05.94 US 246990**

(43) Date of publication of application :  
**21.12.94 Bulletin 94/51**

(84) Designated Contracting States :  
**AT BE CH DE DK ES FR GB GR IE IT LI LU NL  
PT SE**

(88) Date of deferred publication of search report :  
**19.04.95 Bulletin 95/16**

(71) Applicant : **ELI LILLY AND COMPANY  
Lilly Corporate Center  
Indianapolis Indiana 46285 (US)**

(72) Inventor : **Yang, Na Nora  
2750 Wood Wind Way  
Indianapolis, Indiana 46268 (US)**

(74) Representative : **Hudson, Christopher Mark et al  
Lilly Industries Limited  
European Patent Operations  
Erl Wood Manor  
Windlesham Surrey GU20 6PH (GB)**

(54) **Materials and methods for screening anti-osteoporosis agents.**

(57) The present invention relates to methods for the identification of therapeutic agents for the treatment of osteoporosis and serum lipid lowering agents. The invention relates to isolating cloning, and using nucleic acids from the promoter regions of transforming growth factor  $\beta$  genes comprising novel regulatory elements designated "raloxifene responsive elements". The invention also encompasses eukaryotic cells containing such raloxifene responsive elements operably linked to reporter genes such that the raloxifene responsive elements modulate the transcription of the reporter genes. The invention provides methods for identifying anti-osteoporosis agents that induce transcription of genes operably linked to such raloxifene responsive elements without inducing deleterious or undesirable side effects associated with current anti-osteoporosis therapy regimens.

EP 0 629 697 A3



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 94 30 4432

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
D,X	JOURNAL OF BIOLOGICAL CHEMISTRY., vol.265, no.31, 1990, BALTIMORE US pages 19128 - 19136 R.L.LAFYATIST ET AL. 'Structural...' * the whole document *	1-4	C12N15/16 C12N15/63 C12Q1/68 A61K31/00
X	CIBA FOUNDATION SYMPOSIA, vol.157, 1991 pages 7 - 28 ROBERTS AB ET AL 'MULTIPLE FORMS OF TGF-BETA - DISTINCT PROMOTERS AND DIFFERENTIAL EXPRESSION' * abstract *	1,3,4	
A	---	10	
A	BONE AND MINERAL, vol.7, no.3, 1989 pages 245 - 254 FELDMANN S ET AL 'ANTIESTROGEN AND ANTIANDROGEN ADMINISTRATION REDUCE BONE MASS IN THE RAT' * the whole document *	5,10	
A	ACTA ONCOLOGICA, vol.31, no.2, 1992, NORWAY pages 143 - 146 KANGAS L. 'Agonistic and antagonistic effects of antiestrogens in different target organs' * the whole document *	10	TECHNICAL FIELDS SEARCHED (Int.Cl.5) C07K C12Q
A	WO-A-88 03168 (THE SALK INSITUTE FOR BIOLOGICAL STUDIES) * abstract; claims 1-41 *	5	
A,D	US-A-4 133 814 (C.DAVID JONES ET AL.) * the whole document *	10	
		--- -/--	
The present search report has been drawn up for all claims			
Place of search: BERLIN		Date of completion of the search 21 February 1995	Examiner Gurdjian, D
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons * : member of the same patent family, corresponding document	

EPO FORM 1503 (04.92) (P04C01)



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 94 30 4432

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
A,D	US-A-4 075 227 (C.DAVID JONES ET AL.) * the whole document *	10	
A,D	US-A-4 380 635 (M.K.PATERS) * the whole document *	10	
A	WO-A-88 07579 (BOARD OF REGENTS, THE UNIVERSITY OF TEXAS SYSTEM) * abstract; claims 1-16 *	5	
A	ENDOCRINOLOGY, 126 (3), 1990, 1449-1456., vol.126, no.3, 1990, BALTIMORE US pages 1449 - 1456 SUNDSTROM S A et al 'THE STIMULATION OF UTERINE COMPLEMENT COMPONENT C3 GENE EXPRESSION BY ANTIESTROGENS'	1-5,10	
P,X, O	CALCIFIED TISSUE INTERNATIONAL, vol.54, no.4, May 1994, BERLIN page 342 Yang N N et al 'Estrogen receptor: One transcription factor, two genomic pathways'	1-4	
T	JOURNAL OF BONE AND MINERAL RESEARCH, vol.8, no.S1, August 1993 page S118 YANG NN ET AL 'RALOXIFENE, AN ANTIESTROGEN, SIMULATES THE EFFECTS OF ESTROGEN ON INHIBITING BONE-RESORPTION THROUGH REGULATING TGF-BETA-3 EXPRESSION IN BONE' * abstract *	1,10	TECHNICAL FIELDS SEARCHED (Int.Cl.5)
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 21 February 1995	Examiner Gurdjian, D
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone  Y : particularly relevant if combined with another document of the same category  A : technological background  O : non-written disclosure  P : intermediate document</p> <p>T : theory or principle underlying the invention  E : earlier patent document, but published on, or after the filing date  D : document cited in the application  L : document cited for other reasons  &amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1503 01/94 (P.O. 01/94)



Europäisches  
Patentamt  
GD 1

European  
Patent Office  
DG 1

Office européen  
des brevets  
DG 1

SHEET C

EP 94304432.1

Remark : Although claims 6-9 are directed to a method of treatment of the human/animal body (Article 52 (4)EPC), the search has been carried out and based on the alleged effects of the compound/composition.